

CLEAN COPY OF CHANGES

Page 7, line 2:

B1
Flange 24 is a part of, attached to, or supported by slide block 28. Thus, flange 24 and clamp 22 move with slide block 28. The connector 12 is attached to flange 24 by fasteners 26.

Page 7, line 4:

Slide block 28 further has as a part thereof or attached thereto at least one and, preferably, a pair of mounting lugs 30. Mounting lugs 30 each support an assembly of a fastener or bolt 32, a coil compression spring 34, and a foot block 36. The bolt 32 extends through mounting lugs 30 and may translate therethrough. Bolt 32 is surrounded by spring 34 and is threaded into or otherwise attached to foot block 36 and tightened to pre-stress the spring 34 to a level that the combined compression pre-stress of multiple springs 34 exceeds the force necessary to overcome the frictional disengagement forces necessary to disconnect the connector 12 and mating connector 14.

B2 C1

Page 7, line 16:

B3

Holding member or foot block 36 not only co-operates with bolt 32 to confine spring 34 in its pre-stressed or pre-loaded condition but also serves to engage electronic circuit card 18 to trap and clamp electronic circuit card 18 in the desired location relative to the electronic circuit card support 38 or base member 38 and locating pins 40. Locating pins 40 are positioned on the electronic circuit card support 38 and mate with holes 39 in the electronic circuit card 18 to assure that the mating connector 14 is accurately positioned below connector 12. The electronic circuit card support is formed to provide a solid support for the edges of electronic circuit card 18 and the area surrounding the mating connector with relief in the region where electronic components are soldered to the electronic circuit card 18.

Page 8, line 1

B4 C2

In order to clamp the electronic circuit card 18 onto electronic circuit card support 38, the foot blocks 36 are lowered by lowering slide block 28, thus engaging foot blocks 36 with the electronic circuit card 18. Continued downward movement of slide block 28 will compress springs 34, thereby progressively increasing force of foot blocks 36 upon the electronic circuit card 18.

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B5

Movement of slide block 28 is effected and controlled by an actuating assembly or toggle assembly 41. Toggle assembly 41 is comprised of a thrust shaft 42 extending from slide block 28, pivotally connected to a toggle link 44, and extending through toggle link 44 to toggle arm 46. Extending from toggle arm 46 and a part thereof is a toggle lever 48. The toggle arm 46 and toggle link 44 are articulated by a toggle joint 50 or toggle pin 50. The toggle assembly 41 is further preferably articulated at one end to a toggle support bracket 47 which, in turn, is fixedly attached to a supporting frame 56.

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The foot block 36 may be fashioned with a reduced or small area foot or surface 37 to engage a small or reduced area on the electronic circuit card 18 surface, thereby concentrating the holding force onto a small unpopulated region of the electronic circuit card 18. A smaller engagement area avoids damage to any of the circuit lands or electronic components with which an electronic circuit card is normally populated.

B6 C3

10/010,976; ROC9-2001-0250

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1. A connecting device for connecting a connector by mating to an electronic circuit card, said electronic circuit card comprising a mating connector, said connecting device comprising:

an electronic circuit card support, said electronic circuit card support comprising locating pins engageable with said electronic circuit card for positioning said electronic circuit card relative to said connecting device;

a frame fixedly disposed relative to said electronic circuit card support;

a movable member disposed for confined movement toward and away from said electronic circuit card support;

said movable member carrying at least one biasing spring and at least one engaging member biased by said spring toward said electronic circuit card support and away from said movable member and further displaceable against said spring-bias and translatable relative to said movable member;

said movable member further comprising a clamp for holding and translating said connector with said movable member,

whereby actuation of an actuating assembly displaces said moveable member relative to said frame, said connector relative to said mating connector and connectingly mates said connector and said mating connector.

2. The connecting device for connecting by mating a connector to an electronic circuit card of claim 1 wherein said electronic circuit card support comprises a support disposed in a region of said electronic circuit card comprising electrical conductors electrically associated with said mating connector.

3. The connecting device for connecting by mating a connector to an electronic circuit card of claim 2 wherein said actuator comprises a toggle.

4. The connecting device for connecting by mating a connector to an electronic circuit card of claim 3 wherein said actuator comprises a manually operable handle.

5. The connecting device for connecting by mating a connector to an electronic circuit card of claim 4 wherein said frame comprises a guide engaged with said moveable member confining said movement to a toward and away motion relative to said electronic circuit card support.
6. The connecting device for connecting by mating a connector to an electronic circuit card of claim 5 wherein said guide comprises at least two parts, one of said parts constrained for only reciprocal, linear movement relative to the other of said parts.
7. The connecting device for connecting by mating a connector to an electronic circuit card of claim 1 wherein said clamp comprises a base member and a holding member and said holding member is restrained relative to said base member by fasteners.
8. The connecting device for connecting by mating a connector to an electronic circuit card of claim 1 wherein said engaging member comprises a surface disposable for engagement with one surface of said electronic circuit card and forcing said electronic circuit card toward said electronic circuit card support.
9. The connecting device for connecting by mating a connector to an electronic circuit card of claim 8 wherein said spring exerts force through said engaging member on said electronic circuit card in excess of any force exerted on said connector by said mating connector to disconnect said connector from said mating connector.

10. A method of connecting a connector to a mating connector on an electronic circuit card comprising:

providing an apparatus comprising a frame, an electronic circuit card support, a moveable member displaceable relative to said frame and confined for movement only toward and away from said electronic circuit card support, said moveable member supporting a clamp and said connector and at least one spring exerting a spring-bias on an engaging member, said engaging member disposable for engagement with said electronic circuit card and an electronic connector retained within said clamp, said movable member connected to a toggle assembly;

positioning said movable member, said clamp, said connector disposed within said clamp and said spring-biased engaging member displaced from said electronic circuit card support;

disposing an electronic circuit card and a mating connector aligned with said connector within said clamp;

displacing said moveable member toward said electronic circuit card support and against said spring-bias, thereby trapping said electronic circuit card against said electronic circuit card support, and

further displacing said movable member, said clamp and said connector into a connected position, thereby mating and connecting said connector with said mating connector.

11. The method of connecting a connector to a mating connector on an electronic circuit card of claim 10 comprising an additional step of locking said movable member in said connected position.

12. The method of connecting a connector to a mating connector on an electronic circuit card of claim 11 wherein said locking step comprises displacing a toggle joint in a position whereby force of said spring-bias on said toggle joint is prevented from disconnecting said connector and said mating connector.

13. A method of connecting and disconnecting a connector to a mating connector on an electronic circuit card comprising:

providing an apparatus comprising a frame, an electronic circuit card support, a moveable member displaceable relative to said frame and confined for movement only toward and away from said electronic circuit card support, said moveable member supporting a clamp and said connector held by said clamp and at least one spring exerting a spring-bias on an engaging member, said engaging member disposed for engagement with said electronic circuit card and an electronic connector retained within said clamp, said moveable member connected to a toggle assembly;

positioning said movable member, said clamp, said connector and said spring-biased engaging member displaced from said electronic circuit card support;

disposing an electronic circuit card and a mating connector aligned with said connector held by said clamp;

displacing said moveable member toward said electronic circuit card support and against said spring-bias, thereby trapping said electronic circuit card against said electronic circuit card support,

further displacing said movable member, said clamp, said connector into a connected position connecting said connector with said mating connector,

thereafter, displacing said movable member away from said electronic circuit card and said electronic circuit card support, responsive to forces provided at least in part by said spring;

separating said connector and said mating connector;

further permitting extension of said spring; and

withdrawing said movable member away from said electronic circuit card.

14. The method of connecting and disconnecting a connector to a mating connector on an electronic circuit card of claim 13 comprising an additional step of locking said movable member in said connected position.

15. The method of connecting and disconnecting a connector to a mating connector on an electronic circuit card of claim 14 wherein said locking step comprises displacing a toggle joint in a position whereby force of said spring-bias on said toggle joint is prevented from disconnecting said connector and said mating connector.

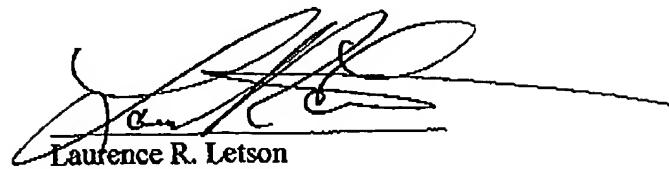
16. The method of connecting and disconnecting a connector to a mating connector on an electronic circuit card of claim 14 comprising the further step of displacing said toggle assembly to a position locking said movable member, preventing movement of said movable member under the influence of said spring-bias, and a subsequent step of displacing said toggle assembly to a position unlocking said movable member permitting movement of said movable member under at least a force partially provided by said spring-bias.

17. The method of connecting and disconnecting a connector to a mating connector on an electronic circuit card of claim 15 comprising the further step of displacing said toggle assembly to a position locking said movable member, preventing movement of said movable member under the influence of said spring-bias, and a subsequent step of displacing said toggle assembly to a position unlocking said movable member permitting movement of said movable member under at least a force partially provided by said spring-bias.

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